



## **Optical Waveguide Evanescent Ribbon Coupler**

**This invention was made with Government support under contract DASG60-02-P-0206 awarded by U.S. Army Space and Missile Defense Command. The**  
**5 Government has certain rights in the invention.**

### **Field of the Invention**

**01) The present invention relates to optical interconnects for computing and**  
**10 processing systems and more particularly to an array waveguide evanescent coupler (AWEC) for daed-to-backplane optical connection.**

### **Background of the Invention**

**15 02) Ongoing research and development efforts in very large scale integrated (VLSI) circuits have led to a dramatic decrease in component size and an increase in overall chip size. The increase in complexity and density of the IC's is expected to increase the speed and reliability of the systems in which they are used and, at the same time, reduce the amount of power consumed. One major limitation of**  
**20 packaged chips which use electrical interconnects is the relatively long distances required to interconnect devices and circuits on a common substrate or to connect chip packages on different circuit boards. Often, the interconnections use aluminum or polysilicon lines. Ohmic power losses, long delay times escessive wafer space, and complex patterning techniques, are some of the other limitations**  
**25 associated with electrical interconnects. Operating speed, for example, can be limited by external electromagnetic interference (EMI) from connecting lines, which**